

COIN CONNECTION®

I, ROBOT: You Won't Believe Your Eyes!



With the introduction of I, ROBOT, the latest coin-op video game from ATARI, the company displays the results of over two years of game development.

The results are incredible animation, super-realistic three-dimensional graphics and game play excitement never before possible. And along with superior game play, I, ROBOT features "Doodle City," a magnificent alternative to game play, where players can actually manipulate the I, ROBOT game graphics in a variety of colors and shapes.

I, ROBOT has a number of special features which set it apart from ordinary coin video games. Doodle City offers players dynamic interactive computer entertainment.

There are over 100 different waves featuring 22 unique geometric playfields with space waves and bonus waves in between. A special transporter allows players to select higher play levels for extra challenge and bonus opportunities. Players can change their playfield viewpoint from overhead to ground level, where shooting enemy objects is worth more points.

Game play begins with this challenge: "You are an unhappy Interface Robot (#1984) in rebellion against 'Big Brother' and his 'Evil Eyes'. The Evil Eye dictates the 'Law'. The Evil Eye will kill you if it sees you breaking the Law. Your mission is to destroy the Evil Eye."

The Law is no jumping, but the player must move a Robot despite the Law. The Robot must collect all the red zones on the playfield, jumping from one to another when the Evil Eye is not looking. If the Eye is red it sees the Robot jumping and will zap him. Each time the Robot collects a red, the Evil Eye loses one of its protective shields. When all the reds are collected, the Shield is completely destroyed and the Robot can reach the secret pyramid and terminate the Evil Eye.

While in the various terrains, the Robot is threatened by ranks of enemies released by the Eye that must be dodged or destroyed: Killer birds, giant beach balls, robot slicers, space sharks, deadly soccer balls, pyramid mines, and buzz saws, to name a few.

Every third terrain, the Robot must enter a red pyramid in order to eliminate the Evil

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I, ROBOT

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Eye. Inside the pyramid jewels are scattered about. The Robot has just one chance to collect the jewels before he is thrust into the next space wave.

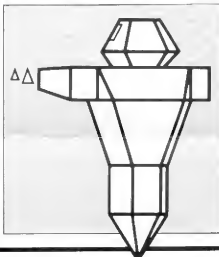
In between each terrain the Robot must travel through space, once again avoiding or destroying as many objects as possible. If all the tetrahedrons are destroyed, the player will achieve a special bonus. An extra life is awarded if the player spells out "I, ROBOT" by shooting the individual letters as they appear sequentially in various space waves.

To increase challenge at higher levels, an awesome Viewer Killer appears after completion of Level 26 to chase the player (not the Robot). The player can avoid the Viewer Killer by changing the playfield perspective. If the Viewer Killer is not avoided, the player will be "destroyed."

The player controls the Robot by moving the analog Hall-effect joystick. Fire buttons are used to shoot obstacles. Once game play begins, start buttons are used to change playfield viewing angle.

A high score table records the top ten game scores. Plus, the game automatically keeps track of the highest score achieved in the space wave, and also keeps track of the shortest time taken to get through each terrain. If the player beats the high score in the space wave or completes a terrain in a shorter time, he is awarded bonus points.

I, ROBOT is a first—an engineering and entertainment breakthrough.



Cloak & Dagger® Movie Due in August

Cloak & Dagger, the Universal film starring Dabney Coleman, is due to be released on August 23rd. Now's the time to take advantage of the movie's release. Make sure you have this high profit Action Pac conversion kit in your location.

Now is also the time to place a Cloak & Dagger game in your local theater that's scheduled to show the movie. It's a great opportunity to cash in on the pre-release publicity. And because patrons will want to play the game after they've seen it played in the movie, it's a super way to generate new revenues.

There are still a few Cloak & Dagger Action Pac conversion kits available. Cloak & Dagger converts Defender®, Stargate®, Robotron 2084®, and Joust®. It's an explosive game with secret agent-type action that keeps players coming back for more. To order a Cloak & Dagger Action Pac, contact your local distributor or Atari Coin-op Customer Service.

An Atari Action Pac™ Can Extend the Life of Your Investment

ATARI has recently introduced three hot new conversion kits that are already adding new excitement and new profitability to older games.

The Crystal Castles™ Action Pac converts Missile Command, Arabian, Dig Dug, Food Fight and Kangaroo. Bentley Bear™ is back once again, gathering more ruby gemstones. Each wave of the conversion game still presents him with a tempting trail winding in and out and all around 16 different 3-D super maze structures. Bentley zips past his competition, stunning enemies in a single leap, scurrying through the tunneled interior of the maze, and discovering Secret Warps that

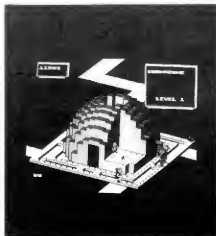
access players to advanced game levels. And he continues to deliver multiple challenges that keep players making tracks into arcade and street locations alike. Also included and shipped with this kit is a fabulous Crystal Castles location poster.

The Major Havoc™ Action Pac converts Tempest®, Space Duel, Gravitator and Black Widow™. Major Havoc is a refreshing change of space that blasts players into a new entertainment dimension. It's really 2 games in 1, combining space action with maze action in a new concept that appeals to players of all skill levels. It's comic book style adventure packed into a game of incredible depth and challenge

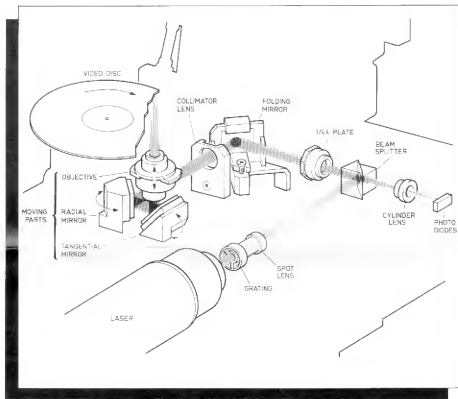
that delivers replay after replay.

The Millipede™ Action Pac converts Arabian, Dig Dug and Kangaroo. The bugs are back. Millipede is following in the earnings longevity of its classic cousin, Centipede. It's continuous high-energy excitement with all-new creatures, realistic sound effects and play-again features to challenge and entertain the entire family. It's a proven winner.

Each kit includes all the electronics, hardware, instruction manuals and graphic materials for complete conversion. You can order these Action Pac conversion kits from your distributor or from Atari Coin-op Customer Service.



Principles of Laser Disc Operation



Atari FIREFOX, the coin video game, introduced the most advanced disc player used in the video game industry. Some features in the Philips Firevision disc player were custom-designed for Atari to make the player fast enough and interactive enough for our technical requirements. One of the key features of the Philips player is its ability to instantly jump a large number of tracks, thus eliminating dead spots in game play.

Laser Disc

The laser disc contains 54,000 tracks and has a total playing time of approximately 30 minutes. The tracks, similar to grooves on a record, are microscopic pits; the length and the spacing between the pits determines the information stored on the disc. The separation between tracks is 1.6 microns (a micron is one millionth of an inch), the width of the pits is 0.4 micron, and the depth is 0.1 micron.

Making a laser disc is much more involved than making a record. First a master recording is made, consisting of a glass plate with a photosensitive coating on one side. The information to be recorded modulates the beam of a laser which "writes" the information in the coating. After a photographic development process, a pattern of pits appears. A master stamp of the pits is made, which then transfers the pattern into a transparent plastic base which becomes the disc. A thin, reflective layer of aluminum is added, and a protective coating is placed over the aluminum layer.

Optical Reading of the Disc

A laser beam penetrates the highly reflective flat disc and focuses onto the surface of the aluminum coating. Light reflected from a pit is less bright than the areas without pits. This modulation of light (light vs. dark) is focused on a photodiode which converts the light to a frequency-modulated electrical signal, corresponding to the information on the disc.

Why does a pit produce less light? The depth of the pit, 0.1 micron, is exactly a quarter wavelength of a laser beam. So as the beam travels into the pit, it must travel an extra half wavelength to get back to the outer surface of the disc. This puts it 180° out of phase to the light reflected from the surface, and thus they cancel each other out. Because the width of the pit is almost the same size as the wavelength of the beam, what little light remains reflects back over a wide angle.

Each of the 54,000 tracks has a number encoded on it, which is read by the disc player and the logic boards, letting the player and microprocessor know where the laser beam is presently located on the track. Each track contains a picture to which the game microprocessor may want to direct the laser. For instance, in FIREFOX you have a choice of flying in the sky or close to the ground. If you were in the sky and chose to go to the ground, the microprocessor would tell the disc player which track contained the appropriate ground scene. The disc player would then move the laser beam to that track.

The Optical System

The heart of the video disc player is the laser and optical components, located on a slide assembly. To understand the optical system, one must understand the characteristics of light.

For this purpose, a light beam can be thought of as electromagnetic energy whose wavelength is visible to the human eye, or a high-frequency sine wave propagating through space. Ordinarily, light is non-polarized, or constantly changing its polarity. Through optics we can force the light waves to move only in certain directions, forming horizontally, vertically, or circularly polarized light.

Perhaps the most well-known application of this phenomenon is in polarized sunglasses. The special lenses will not pass light that is horizontally polarized. Since most light from glare and reflections is horizontally polarized, it won't pass through the lenses. The video disc player also uses optical components which are affected by the polarity of light.

The red light beam from the laser is vertically polarized. The diagram shows the path traveled by the light beam on the player's slide assembly. The beam passes through a series of lenses, a prism and mirrors, and is directed onto the disc according to the messages given by the microprocessor. The reflected light returns through the mirrors, prism, and lenses to the photodiodes, creating the electrical signals.

It is a good thing that the game player doesn't have to know all the technical aspects in order to enjoy playing the game! But it's interesting to have some understanding of the technology that puts so much fun into our leisure-time activities. The next time you enjoy playing FIREFOX or one of the other laser disc games, you'll have an appreciation of the research and development that takes place before a new product reaches your location.

WATCH FOR ATARI

RETURN OF THE JEDI®

COMING IN OCTOBER

Summer Sale on Promotional Items



Atari Customer Service announces a close-out sale on game T-shirts and Atari Collector Pins.

T-shirts come in men's sizes S, M, L, and XL, where starred, children's sizes are available in S, M, and L.

SALE PRICE \$2.90 each

Asteroids®	*Kangaroo®
Asteroids Deluxe™	*Liberator™
Battlezone®	*Millipede™
Centipede®	Missile Command®
Dig Dug®	Quantum™
*Food Fight™	Space Duel®
*Gravitar®	

SALE PRICE \$3.25 each

Crystal Castles™ *STAR WARS®
Not all sizes are available in all styles of shirts.

ATARI Collector Pins are now 50¢ each. A 10% discount will be given on orders of 25 or more pins, either all the same or an assortment.

Asteroids	Kangaroo
Asteroids Deluxe	Millipede
Battlezone	Missile Command
Centipede	Space Duel
Dig Dug	Tempest®
Food Fight	Xevious®
Gravitar	

New Items available include long-sleeved T-shirts for FIREFOX®, Pole Position® long sleeve, and Pole Position II® at \$9.00 each; TX-17 shirts are \$6.50.

Posters are priced at \$2.00 each; titles are Crystal Castles, Firefox, Pole Position II, TX-1 and STAR WARS. They're perfect for an inexpensive decor, and are hand some framed.

All these items will make great gifts, always for summer business builders, or you can outfit yourself, your family or your employees. Since sale items are in limited quantities, place your order now. List the items you want (be sure to specify quantity and sizes), add 10% for shipping and handling, and any appropriate state sales tax (if required). Include your telephone number with the shipping information in case there is a problem filling your order.

Send with your remittance to: **ATARI CUSTOMER SERVICE**, 737 Sycamore Drive, P.O. Box 906, Milpitas, CA 95035. For further information, phone 408-943-1120.

Coin Connection Staff

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TECHNICAL TIPS

FIREFOX

Switching Power Supply

When replacing the two rectifiers in the BR4 bridge, apply ample thermal compound between the diodes and the heat sink. This will insure good thermal conductivity for continued reliability.

The combination of the MOSFET switches Q1 and Q2 and resistors R21, R22, R23 and R24 must be closely matched for proper operation. If one of these components fail, others may be

damaged even though they physically appear okay. Therefore, it is highly recommended that all components be changed when one fails. Also, ample thermal compound must be used between the transistor and the heat sink.

MAJOR HAVOC

Conversion Kits

Some games may exhibit slow player control at higher levels of play. The solution is to insert a 1K-ohm resistor into the location marked R186. R186 is located alongside the socketed IC at location 12N (137304-001) on the pins 13 to 24 side.

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